

James T. Parker  
Funk, Ne 68940

10% in 50 years.

Political Solution or Science?

I think the former.

One year ago in August Ann Bleed stated that "in all likelihood the entire Platte basin would be fully or overappriated when the DNR met in September."

It did not happen.

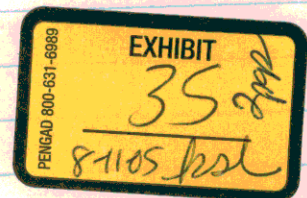
Why.

I believe Ann's statement from Kearney one year ago awakened sleeping giant in the east who last September did not have all their ducks lined up in a row.

In the past year it is my understanding that both the cities of Omaha and Lincoln dramatically increased their pumping capabilities at Ashland, Nebraska despite protests from the city of Ashland.

I believe Lincoln & Omaha had a large political influence on the DNR when they met in September of last year and I believe they and Central are having a large political influence on establishing the 18/50 formula.

Establishing the 18/50 formula will move the water east <sup>to Lincoln & Omaha</sup> where 2/3 of Nebraska live. It will further destroy economic development in the third district where in 2003 ~~we~~ had the distinct honor of having 7 of the 12 poorest counties in America.



Central admits that most of the water ~~flow~~ in McConnally comes from return flows from ~~the~~ surface water projects above them in western Nebraska & Wyoming.

Those ditch companies, like we, have been turning to center pivot that have virtually no run off.

The impact of ~~open~~ groundwater pumps on McConnally has in my opinion been overstated because it was the only thing Central could attack when the lake dried up.

They could not force the canal companies above them to return the water that they had historically returned to the river.

10/50 is a political decision that favors consolidating water interests into the hands of the DNR where large interests ~~are more likely to~~ have a better chance of dictating water policy.

I hope the <sup>natural</sup> resource district here today will fight you tooth and nail on this proposal. No issue in Nebraska is more important.

Nothing has been mentioned of the fact that rather than place safety measures at the dam to prevent a break — they simply lowered the ~~the~~ maximum lake level which in turn destroyed much of the historic storage capacity. It was a political decision and a wrong one.

American Rivers  
FOUNDED 1973

**STATEMENT OF  
CHADWIN B. SMITH  
DIRECTOR, NEBRASKA FIELD OFFICE  
AMERICAN RIVERS**

**ON THE NEBRASKA DEPARTMENT OF NATURAL RESOURCES'  
DRAFT RULE FOR DESIGNATING FULLY APPROPRIATED RIVER  
BASINS**

**AUGUST 11, 2005  
KEARNEY, NEBRASKA**

Good morning and thank you for the opportunity to provide these brief comments on the DNR's draft rule for designating fully appropriated river basins in Nebraska. I am here today representing both American Rivers as Director of the Nebraska Field Office and the Nebraska Wildlife Federation as a member of its Board of Directors. I was a member of the Negotiated Rulemaking Committee that helped the DNR draft the proposed rule, and have previously submitted formal written comments. My testimony today will be a summary of those concerns.

In general, we believe that the DNR is moving forward in the right direction in efforts to define stream and river basins in this state that are fully appropriated. As intended in LB 962, Nebraska is now moving into the modern age of Western water policy and the connections between groundwater and surface water must necessarily be recognized as part of that policy maturation. Both groundwater and surface water are the lifeblood of this state, for agriculture, municipal use, recreation like hunting and fishing, and support of important fish and wildlife resources. As LB 962 is implemented, we believe that all of these uses can be found to be compatible and can thrive with more proactive and progressive water management.

Our chief concern about the DNR's proposed rule is that the 10%/50 year line is too narrowly drawn and will leave a substantial amount of streamflow depletion outside the hydrologically connected area. For example, at year 50 a well could be depleting by far more than 10% of the *annual* amount then pumped, and yet the amount pumped in 50 years could still be under 10%. This kind of result is one reason why more stringent criteria should be used – that would help avoid the “edge effect” of driving new water development to just outside the 10%/50 year line, leaving those operators unregulated but creating a larger burden on operators within the line. Using more stringent criteria would also put Nebraska more in line with neighboring states like Colorado, which should be considered given ongoing negotiations over management of a transboundary river like the Platte. As we discussed during the Negotiated Rulemaking process, we could not find any legal example that pointed to something as high as 10% being a “de



minimis" use. This suggests that to make the final rule enforceable, the 10% should be changed to something closer to 1%.

The final rule must ensure that the geographic area determined to be fully appropriated captures the full long-term impacts of both surface and groundwater use. We are concerned that the 10%/50 year line will draw the fully appropriated line too narrowly, pitting neighbor against neighbor and avoiding the true hydrological impact of a basin's water development and use. The final rule should be modified to avoid this kind of conflict and ensure a more proactive approach to planning for future water needs in fully appropriated basins.

I would like to highlight some of our other main concerns for your consideration:

- We do not believe that 25 years is an adequate amount of time to capture the full range of potential impacts on streamflow – 25 years does not look long enough into the future to provide a reasonable approximation of maximum impact, particularly for new wells.
- The final rule should make clear that when making a fully appropriated determination, the DNR will utilize all relevant information from other government agencies such as the Nebraska Game and Parks Commission, U.S. Fish and Wildlife Service, and the Nebraska Department of Environmental Quality.
- Given the implementation of LB 962 and the growing trend in being creative with water use and water rights (including the ability to transfer water rights), non-irrigation rights will be involved in making determinations about whether a stream is fully appropriated. In the final rule, the DNR should at least clarify whether the appropriate standard will be based on the underlying water right, or the current use of that right.
- The "base flow tributary" notion is a concern, as it does not seem to be grounded in the best science. For example, where you have a streambed with no visible surface flow you have subsurface streambed flow that is feeding the river, and thus reductions in surface or groundwater supply to that 'dry bed' tributary would further reduce downstream flow.
- Relying solely on the availability of diversion for the most junior irrigation right does not always tell the whole picture. For example, if a stream is not considered fully appropriated, and the DNR would preclude a new surface water appropriation due to an issue like the presence of a threatened or endangered species without an adequate instream flow right but would not preclude new groundwater wells, the result would be an inequity between surface and groundwater users and further harm to both the streamflow and the species.
- The final rule should include details about the timeline for parties to submit additional information for the DNR to consider, when public review of the scientific data used by the DNR will take place, how long the public will have to comment on a proposed determination, and what timeframe the DNR will use to make a final determination.

In conclusion, we hope these comments will provide the DNR with feedback that will strengthen the final rule, make it more responsive to the water resource needs of the state, and make it more useful for Nebraska residents. We appreciate the opportunity to provide these comments, and also to have been able to participate directly in the Negotiated Rulemaking Committee process.

**Testimony Regarding Rules for  
Fully Appropriated Basins  
Presented to the Department of Natural Resources  
August 11, 2005**

My name is Mike Onnen, and I am Manager of the Little Blue Natural Resources District located in Davenport. I appreciate the opportunity to comment on the proposed rules.

The Little Blue NRD Board of Directors generally supports the positions already stated by the NARD regarding the proposed "fully appropriated" rules.

The standard used for many years in various significant applications in Nebraska to determine impacts to stream flows, has been a threshold when groundwater pumpage over a 40 year period is expected to deplete stream flow by at least 28% over that time. The 28% in 40 year criteria is the most widely accepted measure for stream depletions and has been consistently applied throughout the state. We therefore believe that the 28% in 40 years criteria should be used in determining fully appropriated basins, not the 10% in 50 years as suggested in the regulation.

Draft maps showing the extent of the possible fully appropriated basins using the 10% in 50 year line reveals an extensive overlap of lines across several NRD boundaries. We are concerned that the more agencies that are involved in trying to develop and administer a joint plan, the more potential conflicts and discord may be experienced.

One factor that has always puzzled me personally about the discussions of inter-related surface and groundwater resources is the capability of the groundwater system to re-fill to capacity or beyond, in periods of high precipitation and recharge, potentially wiping out many years of lag-time depletions. We believe these climatic and geologic factors may not be fully taken into account when applying the criteria for stream flow depletions.

We do appreciate and support the Department's statement in Section 002 which indicates that the Department will use the best scientific data and information readily available in making the determinations. At one time, rumors existed that older and less reliable studies may be used if they were viewed to provide a broader level of protection to streams.

Again, thank you for the opportunity to comment on this rule.



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**Testimony for NDNR Public Hearing on Rules and Regulations for  
Designation of Fully Appropriated Basins, Sub-Basins and Reaches  
John Thorburn, Tri-Basin NRD  
August 11, 2005**

I am John Thorburn (Spell). I am the manager of Tri-Basin Natural Resources District in Holdrege. Tri-Basin NRD recognizes that the Department of Natural Resources is required by law to annually review the status of water use in Nebraska river basins not already designated as fully or overappropriated. We appreciate the efforts made by the Department to gather public input and advice about regulations for status reviews, including this public hearing. My testimony is offered to supplement testimony by NARD President Dave Nelson. The Tri-Basin NRD Board of Directors fully support the policy positions outlined by Mr. Nelson, and we concur with the points made in his testimony.

Tri-Basin NRD offers the following comments on and recommendations for the proposed DNR regulations.

- 1.) We believe that it is important that the department maintain a consistent standard for delineation of areas where groundwater and surface water users will be regulated to protect water rights. We believe that there is strong precedent for use of 28% average depletion over a period of forty years. It would, therefore, be a mistake for the department to adopt a different standard.
- 2.) We believe that regulating water users in one basin for the benefit of water right holders in another basin is a mistake. Delineation of fully appropriated areas should be limited to the river basins or sub-basins so designated, as described in statutes.
- 3.) We believe that it is unnecessary for the department to consider the potential lag effect of current pumping on streamflows 25 years into the future. State law requires DNR to review the level of allocation in all Nebraska river basins annually. We believe that annual reviews insure detection of a fully appropriated condition in a timely manner.

The board of directors of Tri-Basin Natural Resources District look forward to helping the Department of Natural Resources improve the draft rule for the benefit of all Nebraskans.



**STATE OF NEBRASKA**  
**BEFORE THE DEPARTMENT OF NATURAL RESOURCES**

Hearing to Adopt Rules Under )  
LB 962. )

AFFIDAVIT OF  
STEPHEN J. BROOKS

I, Stephen J. Brooks, am over 18 years of age and have personal knowledge of the matters contained herein and swear under oath to the following:

1. I have practiced as a research or consulting geologist and hydrogeologist for over 23 years. I received a B.A. in Geology from the University of South Florida in 1982 and an M.S. in Hydrology from the College of Engineering & Mines from the University of Arizona in 1988. For over 23 years I have actively engaged in the practice of geology and am a Registered Geologist in the State of Arizona.

2. I have been involved in hydrologic studies as an expert in the states of Arizona, California, Florida, Nevada, Hawaii, New Jersey and New Mexico.

3. I am presently employed by Brown and Caldwell, Environmental Engineers & Consultants in Tucson, Arizona as a geologist/hydrogeologist.

4. At the request of Don Blankenau, I performed an independent analysis of the rule proposed by the Nebraska Department of Natural Resources ("DNR") to implement Legislative Bill 962 which was passed in Nebraska's 2004 Legislative Session. Hereinafter the proposed rule is referred to as "rule".

5. My analysis of the rule included a review of the rule and documents from the DNR; a review of DNR website information; a review of Nebraska stream-aquifer data and information; an extensive survey of related peer reviewed literature to determine the value of the



methodology suggested by the rule; and independent considerations based on my experience as a geologist/hydrogeologist. From this analysis, I have come to the following conclusions:

a. The DNR is likely to employ an analytical solution referred to as the "Jenkins method." This method employs a solution developed by Glover and Balmer (1954) ("Glover solution") to assess the impact of ground water pumping on streamflow. As originally developed, the Jenkins method relies upon a set of simplifying assumptions that often do not apply to the complex stream-aquifer relationships commonly observed in Nebraska. These assumptions include:

- The streambed is in full hydraulic connection with the aquifer and there are no clogging or impeding layers.
- The stream fully penetrates the aquifer and flow into or out of the stream is horizontal.
- The aquifer material impacted by the pumping well under consideration is homogeneous, isotropic, geographically semi-infinite and has a semi-impervious bottom contact.
- The aquifer transmissivity is constant with respect to time and drawdown is negligible relative to the saturated thickness of the aquifer.
- The stream forms a straight-line boundary.
- There is no other source of recharge to the aquifer other than the stream.

b. Where "real world" streamflow-aquifer conditions deviate from the assumptions above, the potential for significant overestimation (or underestimation) of streamflow depletion must be considered and may limit the accurate implementation of this technique to only a limited set of idealized stream conditions. In fact, Jenkins himself stated:

“Field conditions never meet fully the idealized conditions described by the above assumptions. The usefulness of the tools presented . . . will depend to a large extent on the degree to which the user recognizes departures from ideal conditions, and on how well he understands the effects of these departures on stream depletion.”

c. The “real world” streams in Nebraska generally deviate significantly from the Jenkins assumptions. For instance, most streams in Nebraska are characterized as low gradient, wide, and shallow. These streams rarely provide full penetration to the aquifer. In addition, few if any of the streams form ideal, straight-line boundaries. Nebraska’s aquifers are not homogeneous, isotropic or geographically semi-infinite when one considers the broad area identified by the DNR. Furthermore, streambeds are typically not in full hydraulic connection with the aquifer, the actual magnitude of hydraulic connection is poorly understood, and the magnitude of hydraulic connection can often vary in time and space along a streambed. Recharge to the aquifers of Nebraska also occurs in a variety of ways other than just streamflows.

d. Given the hydrogeologic conditions of Nebraska’s streams and aquifers, the Jenkins method would be poorly suited to determine streamflow depletions beyond a relatively short period of years into the future and/or for large geographic regions. If the Jenkins method were to be used for a period of 25 years and/or for large geographic regions, the calculations will likely result in significant overestimates of the depletions to streamflows resulting from ground water pumping. I suggest that a more appropriate period might be as great as 10 years although it should also be noted that Sophocleous *et al.* (1995) and Spalding and Kahleel (1991) did not consider time frames even that long in the sensitivity analyses performed

in their papers evaluating such methods. To avoid technical challenges to results of the Jenkins method, appropriate time periods would need to be determined on a case-by-case basis.

e. The Jenkins method can be a useful tool if used within the scope of its analytical limitations. For instance, Bouwer and Maddock (1997) suggest that the best use of the Jenkins method would be as a ranking tool to assign the potential for impacts by particular wells rather than as a quantitative tool for predicting streamflow depletions. In my view, the Jenkins method could be successfully employed to assess short-term stream depletions caused by shallow wells drawing water from young alluvium adjacent to the streambed. This use is consistent with the limitations of the method identified by Jenkins himself.

f. There is no peer-reviewed scientific support for the proposition that the Jenkins method becomes more accurate when large numbers of wells and broad geographic areas are incorporated into the method. Indeed, given the limitations of the Jenkins method, increasing the number of wells, using a broad geographic area and using long-term estimates as contemplated by the DNR will most likely violate the simplifying assumptions of this method and result in highly speculative results.

6. In sum, it is my opinion that utilization of the Jenkins method or other Glover-Balmer type methods is likely to yield results that are unreliable if used as indicated in the rule.

I declare under penalty of perjury that the foregoing is true and accurate.

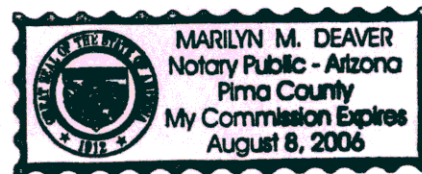
August 9, 2005  
Date

Stephen J. Brooks  
Stephen J. Brooks

State of Arizona )  
County of Pima ) S.S.

Subscribed and sworn to before me this 9<sup>th</sup> day of August, 2005, by Stephen J. Brooks.

Marilyn M. Deaver  
Notary Public



**Testimony of Don Blankenau on Behalf of the League of Municipalities**  
**LB 962 Rule Hearing**  
**August 11, 2005**

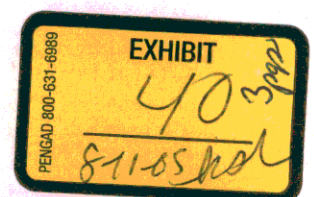
We appreciate the opportunity to provide testimony regarding the proposed rule. While we believe the DNR staff has the best interests of the State at heart, the proposed rule fails to implement the intent of LB 962 and may ultimately prove to be illegal.

To begin with, one of the purposes of LB 962 was to empower the DNR to engage in an analysis that would allow it to reach scientifically supported determinations of whether each basin in Nebraska is fully-appropriated. The analysis that supports these determinations must be grounded in accepted hydrologic practices that have been proven to provide reliable, predictive results. It is legally insufficient to simply employ study methodologies that yield results when such methodologies have not been accepted within the scientific community as being appropriate for the task at hand. Ideally, the rulemaking process that produced the draft rule would have started with a description of the analytical tools or methodologies available for making streamflow depletion calculations and an examination of the limitations associated with each. Knowing the methodologies and their limitations would have allowed the DNR to select the most suitable geographic and temporal criteria given the limitations of the preferred methodology.

Unfortunately that did not happen. Instead, geographic and temporal criteria were selected without regard for what methodology could be used or what limitations might exist for that methodology. As a consequence, the proposed rule does not specify what methodology will be used to make streamflow depletions other than where a model already exists. DNR staff did state on several occasions during the Negotiated Rule Making Committee meetings that they intended to use the Jenkins Method or Solution for making calculations of streamflow depletions where no numerical model exists. Unfortunately, the Jenkins method is not a method that has been accepted or employed by hydrologists anywhere in the United States to make the calculations anticipated by this rule.

To explain this concern further, in any scientific discipline, some methodologies may be considered suitable for one purpose but prove unsuitable for other. For instance, if we were to use Archimedes's displacement method to calculate the mass of an object, the method would be well suited to the objective. If we properly use the method, our results will be accurate and reliable. If, however, we were to use that same methodology to calculate the area of that same object, my methodology would prove poorly suited to my goal even though it is a sound methodology.

In this case, the DNR apparently will use the Jenkins Method/Solution or unknown variations of the Glover/Balmer method, to calculate streamflow depletions where no mathematical computer model presently exists. While these Solutions are based on sound scientific principles, they are not tools suited for making the calculations as contemplated in the proposed rule. I should note that during the negotiated rule making process, Jim Cannia – a hydrologist for the DNR – stated that he would provide a written explanation of how DNR intends to use the Jenkins method. Unfortunately no such explanation was ever provided to the Committee nor was the reason why it was not provided given. As a result, we don't know how the DNR intends to make its



decisions but if it does use the Jenkins method, we know that the method will be found scientifically unacceptable for the proposed application.

I have had Stephen J. Brooks, a geohydrologist from Arizona, review the proposed rule, the Jenkins method and associated methodologies. Mr. Brooks has been involved in hydrologic studies for over 23 years in 6 different states. He has prepared an affidavit which I shall submit as an exhibit to my testimony. As the affidavit demonstrates, in many situations the Jenkins method will not produce accurate predictions of streamflow depletions caused by ground water use. While the Jenkins method could be used for a small number of wells located within alluvial deposits adjacent to a stream, the results it produces when applied using a period of 25 years and using the broad areas contemplated by the DNR will be based on numerous highly speculative assumptions. This will add a significant margin of error.

We also note that while DNR staff advised the Negotiated Rule Making Committee that the Jenkins model becomes more accurate when used over wide areas with many wells, the affidavit of Mr. Brooks indicates that there is no published information to support that claim for real world applications. In addition, numerous corrections and refinements to the Jenkins method have been proposed in the scientific literature in an attempt to overcome the shortcomings of the method, none of which suggest increasing the geographic or temporal scale of the method can be used to overcome the shortcomings.

During the negotiated rule making process, several committee members requested DNR to test the validity of any streamflow depletion methodologies by making calculations of streamflow depletions using historical stream gauging records. For instance, the methodology could have been plainly stated and implemented using data from 1990 and calculating streamflow out to the year 2000 on a gaged reach of any given river. This exercise would have illustrated the contemplated methodology and demonstrated its reliability. We further asked that this exercise be made available to the public. Unfortunately that request was not acted upon by DNR.

Throughout this process, DNR staff have stated that the calculations will be performed in a manner used by other states. This simply cannot be true for the simple reason that no other state has a law like LB 962 or has attempted to implement a regulatory scheme with such a broad geographic and temporal reach as contemplated by this rule. Although some states such as Colorado, Arizona and New Mexico have used Jenkins/Glover methodologies to estimate the impact of individual developments on streamflows, no state has accepted these methodologies to project the impact of multiple wells over such large areas so far into the future. Indeed almost all states including desert regions like Arizona, have limited the application of such regulatory methodologies to near-stream alluvial areas only. Nebraska is alone on this approach.

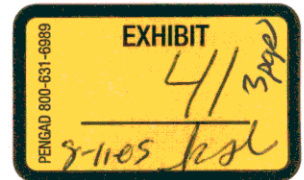
For these reasons, we believe the delineation of a 10%-50 year depletion line based on the Jenkins method/Glover solution has little factual value or meaning. But even if one were to conclude the 10/50 delineation was factually correct, DNR consistently represented to the public that the delineation would be limited to the 28/40 mark along major rivers. It was not understood or expected that all tributaries in Nebraska would be subjected to similar delineations so as to effectively spread the regulatory net over approximately 70% of the land area of the state. The belief that only major rivers would be subject to the 28/40 delineation was one of the major

concessions by many groups that formed the support for the passage of LB 962. DNR's change in direction on this key element will undermine public support for the law and undercut faith in government.

With respect to the use of computer generated ground water models, we are pleased the DNR will make use of COHYST and the Republican River Compact Model. Those tools represent some of the best science available. Nevertheless, the rule contains no commitment by DNR that it will continue efforts to upgrade and refine those models using new data and model post-audits to ensure the results they provide are accurate and precise. In that respect we note that both models are in their respective infancies and their long-term predictive capabilities have yet to be determined. Accordingly, a more modest time frame for future streamflow depletions should be selected until those models have been demonstrated to be reliable. We suggest 10 years as an appropriate time period. That period can be adjusted in future years as model results demonstrate greater reliability.

Finally, we wish to emphasize that this rule will significantly impact property rights, property values and the ability to attract new businesses to Nebraska. For decades one of the few competitive advantages Nebraska has enjoyed over other states was the availability of water. Nebraska is often referred to as the "Saudi Arabia of ground water". Today, despite a long and widespread drought, Nebraska has more fresh ground water within its borders than any other state. We very much believe that our water must be carefully managed so that future generations can also use this resource – both ground and surface waters. But in preserving that resource, the DNR must be careful to avoid arbitrary and capricious acts of regulation that are not supported by accepted scientific methodologies. The failure to do so may result in the over- or under-regulation of water users - either of which could prove harmful to Nebraska's economic and environmental future. Accordingly, we strongly urge the DNR to reject the rule as it is presently written and redraft it in light of the foregoing comments.

TESTIMONY BY  
RON BISHOP, MANAGER  
CENTRAL PLATTE NRD



SUBJECT: DNR Rules & Regulations on Determining Whether a Basin is Fully Appropriated.

Mr. Patterson –

My name is Ron Bishop and I am General Manager of the Central Platte Natural Resources District headquartered in Grand Island, Nebraska. I am presenting testimony today on behalf of, and at the direction of the Central Platte NRD's Board of Directors.

Our NRD has a number of concerns about the proposed Rules. Those concerns fall into three general categories: lag effect, instream flows, and geographic boundaries of the area to be managed.

Regarding our concerns about "lag effect", it is not clear how they will be calculated and therefore there is a real question whether they should be included until the process that will be used is laid out and understood by those who will be impacted.

An even bigger contention about "lag effect" is the length of time that will be considered as an impact on surface flows. Our concern is that twenty-five years is too long a period to expect any degree of certainty due to changes in crop patterns, farm programs, weather, water use and a host of other items that can impact hydrology. As an example of how dramatic an impact things like farm programs or weather can have on hydrology, I would offer the Central Platte Valley during the early 1980's as a prime example. I believe it was 1983 that the Department of Agriculture offered the "PIK" (payment in-kind) program that idled half the irrigation wells and half the irrigated cornfields in the Valley. That year of greatly reduced pumping was followed the next year by an annual rainfall of up to forty-two inches, nearly double the normal rainfall, resulting in greatly increased recharge. The combined impact of those two years of decreased pumping and increased recharge, was ground water rises of up to ten feet or more, resulting in a major change in the groundwater/surface water interrelationship in just a matter of two years.

We would suggest that the Department either drop the lag effect or better define it and adopt ten years as a more realistic time period.

Instream flows were discussed at the negotiated rulemaking committee meeting, but are not mentioned in the report on proposed rule. Previous to LB 962 instream flow water rights were not considered in the management of groundwater for the benefit of inter-related surface water. Because of that exclusion, instream flow water rights could be granted for flows that were only there twenty percent of the time, a much lower standard than other water rights, which need to be there about ninety percent of the time.

Now instream flow can not only cause groundwater to be regulated just like other surface rights can, but can also cause basins to be declared fully appropriated. The Department

needs a rule for instream flow water rights that junior water rights are not administered, and basins are not declared fully appropriated unless, after reviewing the long-term historic average stream flows, the instream flow appropriations are being met less than twenty percent of the time. As an alternative to that "rule", the instream flow law should be changed to require the approved flow rate to be available at least ninety percent of the time in order to place instream flows on the same standard as all other water rights.

The third category of concern on the rules deals with the geographic area within which surface water and groundwater should be considered hydrologically connected (and thereby managed). For the last ten (10) years or more we have been led to believe, based upon policy discussions and decisions, that forty years and twenty-eight percent depletion would be the standard that would constitute any boundary for regulation.

- Nebraska's New Depletion Plan for the Platte River Cooperative Agreement uses 40 yr./28% as the management boundary.
- Nebraska agreed to use 40 yr./28% as the boundary in the Nebraska vs. Wyoming settlement.
- The Director of DNR asked our NRD to impose a suspension of drilling new wells in the western part of our NRD (above Elm Creek) within the 40 yr./28% boundary.
- The Department of Natural Resources set the 40 yr./28% boundary for over-appropriated parts of Central Platte NRD.

In addition to being the recognized "standard", utilizing the 40 yr./28% criteria has the advantage that it greatly reduces the "overlap" among basins and the potential necessity of rewriting an NRD's Integrated Management Plan every time an adjoining basin is declared "fully appropriated". As an example, I would offer Platte County in the eastern end of our NRD. Within that part of Platte County that lies inside Central Platte there is likely a piece of ground that if a ground water well was to be drilled it would impact the Platte River fifty percent of the pumped amount in forty years of pumping and fifty-three percent in fifty years.

Let us also hypothetically say that this same well would also impact the Loup River twenty-five percent in forty years, and twenty-eight percent in fifty years, and impact the Elkhorn Basin eight percent in forty years and eleven percent in fifty years. Under such a scenario, if all three basins had been declared fully appropriated, a "new use" at that location would be expected to offset fifty percent of its pumpage to the Platte with a 40 yr./28% criteria for geographic boundary. However, if 50 yr./10% criteria for geographic boundary were used the "offset" requirement would be fifty-three percent to the Platte, twenty-eight percent to the Loup, and another eleven percent to the Elkhorn and the land area would be in three difference Integrated Management Plans for Central Platte. That same overlap and multi plan requirement would be repeated in the south part of Central Platte with the Platte, Big Blue, and Little Blue Basins.

We would strongly suggest that the Department reconsider their proposed 50/10 boundary and return to the standard that has been utilized, the 40 yr./28%, as a boundary.

One final comment that we want to provide deals with the tool that will be used to determine the geographic boundary, regardless of what year/percentage criteria is utilized.

We were glad that you had "groundwater models" in the listing of information that would be considered in making the determination required by Section 46-713 as we feel the COHYST model is far superior to Jenkins (SDF) method. Jenkins has a number of assumptions that are not true for the Central Platte River.

The assumptions are:

1. Transmissivity does not change with time. Thus for a water-table aquifer, drawdown is considered to be negligible when compared to the saturated thickness.

**Comment: This is not true for the Central Platte Basin!**

2. The temperature of the stream is assumed to be constant and to be the same as the temperature of the water in the aquifer.

**Comment: This is never true in Nebraska!**

3. The aquifer is isotropic, homogeneous, and semi-infinite in areal extent.

**Comment: Not true of the Central Platte Basin!**

4. The stream that forms a boundary is straight and fully penetrates the aquifer.

**Comment: Not true of the Central Platte River!**

5. Water is released instantaneously from storage.

**Comment: Not true of the Central Platte Basin!**

6. The well is open to the full saturated thickness of the aquifer.

**Comment: Not true of the Central Platte Basin Wells!**

7. The pumping rate is steady during any period of pumping.

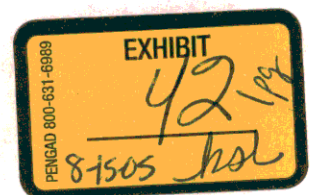
**Comment: Not true of the Central Platte Basin Wells!**

All of the above make Jenkins a poor choice for determining the extent and magnitude of ground water impacts, especially on the Platte River, and we do support your proposed rule to utilize ground water models such as COHYST in your determinations.

My testimony today mainly concerns section 001.02 of chapter 24 dealing with the criteria for determining whether or not a basin is fully appropriated. As a member of the Taskforce when we began meeting several years ago I never in my wildest dreams thought we would be where we are at today. During all the long hours of discussion leading to this point I cannot recall any other numbers than the 28/40 SDF line being used. It has been my strong belief that this would be the criteria that would be used. I feel using the 28/40 SDF criteria is already a huge compromise from where we started. The 28/40 line was used to determine where the over appropriated boundaries would be, why would it not be used for the determination of the boundaries of the future fully appropriated basins? I feel using the 10/50 SDF criterion exposes more area, and many more municipalities, to possible regulation than it needs to given the lack of understanding of the aquifer that we currently have. Why not use the 28/40 line until more data is gathered and a better understanding of each basin is attained and then look to see if changes need to be made. Had I known you would be using the 10/50 SDF criteria I don't think I could have supported LB962.

I feel that what the Taskforce has accomplished was needed and my hope is that we don't go to far and needlessly damage regional economies by overreacting to the current drought. I feel that by working together to intelligently manage our resources we can continue to use the aquifer beneath us in a sustainable way to maintain and improve the economy of the State.

Curt Friesen  
1000 17<sup>th</sup> St  
Henderson, NE 68371  
402-723-5339



RECEIVED 4:58pm

AUG 11 2005

DEPARTMENT OF  
NATURAL RESOURCES

**Comments of the Nebraska Wildlife Federation  
On the Nebraska Department of Natural Resources Proposed Rules for Determination of  
Fully Appropriate Basins, Sub-Basins, or Reaches.**

The following comments are submitted by the Nebraska Wildlife Federation on the Department's proposed rules for determining fully appropriated basins, pursuant to LB 962, enacted in 2004.

In passing, we would note that the Federation's Executive Director, Duane Hovorka, helped represent conservation interests during a portion of the Governor's Water Policy Task Force deliberation over the recommendation that became LB 962. Chad Smith, a Federation Board Member, represented the American Rivers and the Nebraska Wildlife Federation on the negotiated rulemaking committee that attempted to reach consensus recommendation on these rules.

We also note our disappointment that the Department of Natural Resources appointed a negotiating committee overwhelmingly dominated by irrigation interests. The negotiated rulemaking committee included, by our count, two-thirds of its members who were strongly tied to irrigation interests, and just two representatives each from municipal water users and fish & wildlife interests.

It appears the Department continues to appoint important water policy deliberative bodies overwhelmingly dominated by irrigation interests, as evidenced by the recent appointment of a Platte River integrated water management committee again dominated by irrigators. Until the Department provides broader representation on these important deliberative bodies, that reflect the importance of Nebraska's public water resources to all Nebraskans, not just irrigators, the Department will continue to get skewed advice.

Our specific comments on the proposed rules follows.

**001.01 Lag Effect and Assessment Methods**

The lag effect language, in limiting the impact to 25 years in the future, ignores the real-world impact of existing wells which often continues to increase well beyond 25 years. The Department and the Natural Resource Districts should be developing Integrated Water Management plans that guide us for the long term, and that seek a long-term balance between water supplies and water use. Ignoring the longer term impact of the lag effect of wells may well allow an area to over-exploit its water resources by authorizing new water uses that we already know will result in tipping the balance, when combined with future impacts from existing wells.

*We urge the Department to consider a substantially longer lag effect from existing wells, one that more closely approximates the ultimate long-term impact of existing wells.*

In general, we do not object to using maximum corn yields and corn irrigation requirements as the indicator for potential new irrigation rights, as that seems to be the dominant use for new irrigation systems. We would note that the standards proposed (e.g., 85% of crop irrigation requirement) should certainly not be any lower than proposed.

We object to the language indicating that the method used in this rule is not intended to imply a requirement that NRD's adopt similar methods in their integrated management plans. It appears to leave open to the NRD's the ability to adopt inconsistent (and less protective) methods than are contained in the proposed rule.

*We think the expectation should be that those management plans adopt methods consistent with the state rules, unless they can demonstrate that some other method will be at least as protective of Nebraska's water resources.*

**001.02 Hydrological Connections**

We believe the Department's use of a standard for hydrological connectivity is flawed in that it ignores a substantial number of wells that will have a measurable long-term impact on stream flows.



Water rights do not carry with them finite terms; once in place, water users expect that a right to put to beneficial use water (a public asset) will be permanent. Setting an artificially short period (50 years) and an artificially low standard (10% of the water pumped during that period) will ultimately leave outside the operation of an integrated water management plan areas that will have a substantial impact on stream flows, especially over the long term.

Other states have adopted standards that are much more protective of water, a public trust resource, and Nebraska should do the same. Where questions exist, the Department should err on the side of including the broadest area that will have an impact within the plan's development and operation.

***We think the 1% over 100 years would much better protect this precious resource, and should be adopted by the Department.***

We also take issue with the language of the standard, in basing the standard "...on the amount pumped in that time" (i.e., the 50 years), rather than the amount *expected to be pumped at the end of that period* (i.e., the 50<sup>th</sup> year). Because well impacts increase over time, the result of the Department's proposed standard is that, by year 50, a well could be impacting river flow by 20% or more of its annual pumping, but fall outside the regulated area because its total impact over that 50 years is less than 10%. The net result would be to pass on to future generations a watershed clearly out of balance in terms of water supply and use, which could defeat in part the purpose of LB 962.

***We suggest that, whatever standard the Department adopts in terms of percent and years, the appropriate standard be based on the level of depletion expected as a percent of the amount expected to be pumped at the end of that period (e.g., "...the area in which pumping of a well for 50 years will deplete the river or a base flow tributary thereof in the 50<sup>th</sup> year by at least 10% of the amount pumped in that year.")***

## **002 Information Considered**

We agree the Department should use the best scientific information readily available. We hope the use of the word "include" was meant to clarify that the Department is willing and able to consider other information not specifically list. Specifically, information collected by other federal, state or local agencies, such as regulatory investigations by the Department of Environmental Quality, or data collected by the University of Nebraska or Game & Parks Commission, which may not be peer reviewed, should be considered as credible data where available.

While peer review is an important safeguard for scientific inquiries that attempt to assess how empirical data confirms a particular hypotheses, not all data and information gathered by government or private entities becomes part of a peer-reviewed study, and the lack of peer review of data or information should not preclude its use where the validity of the information can be established.

In addition, credible data from other sources (e.g., photographs of water levels or other records) should be considered where appropriate, and where the Department believes that the information is credible and valid.

***While we don't believe that consideration of such data or information is precluded by the language in the proposed rule, we think the rule would be improved by specifically listing as a category of information to be considered: "Other credible data or information from federal, state, or local government entities, and information from other sources where the validity of the information can be established."***



Duane Hovorka, Executive Director

11 August, 2005

**Ann Diers**

---

**From:** Steven Huggenberger [huggenbe@ci.lincoln.ne.us]  
**Sent:** Friday, August 12, 2005 3:41 PM  
**To:** Ann Diers  
**Subject:** Comments on rule making



comments.pdf (172  
KB)

Attached are the comments I would ask be submitted into the record for the rule making from yesterday. Please respond to this email to let me know if you received them. Thank you.

Steven Huggenberger  
Assistant City Attorney  
City of Lincoln  
575 S. 10th, Rm 4201  
Lincoln, NE 68508

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Richard L. Anderson, Police Legal Advisor  
Civil Division  
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Steven J. Huggenburger Joel D. Pedersen  
Conner L. Reuter Margaret M. Blanchford  
Yonya L. Sklamer Joe J. Rupp

Prosecution Division  
Patrick A. Campbell Christine A. Laseke  
Bob E. Caples Marcee A. Brownlee  
Jessica Rerikof

**LINCOLN**  
The Community of Opportunity

MAYOR COLEEN J. SENG

lincoln.ne.gov

August 12, 2005

Department of Natural Resources  
State of Nebraska

I am pleased to provide the following comments related to the proposed rule making for determining fully appropriated basins. I appreciate previously being able to participate on the negotiated rulemaking committee and also appreciate the different perspectives of the various members that served on that committee. I represent the City of Lincoln. My comments are intended to come from a municipal perspective that depends on surface water to serve the needs of our citizenry.

The draft rule begins with a general statement of how the Department intends to determine when a basin, sub-basin or reach is fully appropriated. The Department will look at the then-current uses which are hydrologically connected to the stream and determine when those uses, in the reasonably foreseeable future, cause insufficiencies in the surface water. I don't believe the proposed rule lives up to the goal of the general statement in a number of ways.

First in addressing whether or not insufficiencies are caused. The rule in 001.02 defines away uses through a definition of "hydrologically connected" that over a 50 yr timeframe deplete the river less than 10% of the amount pumped. There is no suggestion by anyone that such amounts that are less than the 10% referenced here are not actually hydrologically connected but simply that they're insignificant. Neither does anyone dispute that such uses may cause insufficiencies but simply they're not worth accounting for. The City doesn't have a problem with some component being unnecessary to account for but we would suggest those amounts should be de minimus amounts. And 10% is not a de minimus amount. We would suggest something along the lines of 1%. There is a variety of legal guidance available to determine what a court would recognize as de minimus.

There was much testimony at the hearing that indicated that the Water Policy Task Force was always led to believe that the 28/40 line was going to be used. As a member of the Task Force, I do not recall any such assurance. There was no agreement by the Task Force as to the appropriate demarcation line and that is precisely why this rule making process was necessary. I

agree very much with the reasoning that using a broader criteria is a better policy because it tends to work against the tendency to develop just outside the line and thereby decrease the negative impacts of such activities.

The testimony was filled with comments about using the best science to make the decisions. Much of what followed that statement had nothing to do with science. It is suggested that we should abandon the 10/50 line because people like the 28/40 better, or the 28/40 line was used in some other hearing, or people are more familiar with the 28/40 line. Where's the science in any of this? If there is a hydrological connection and the impacts are not deminimus, it is only prudent to plan accordingly.

Secondly, the number of lag effect years was limited in the proposed rule to 25. The general rule talks about addressing uses that will occur in the reasonable foreseeable future. What is a reasonable period of time to be looking at lag effects. We think it is folly to focus on a period of time that is less than a generation. In hydrological terms, 25 years is a deminimus timeframe. The problems that have occurred in the Republican basin, or Pumpkin Creek or parts of the Platte, or Texas or Arizona or other areas have occurred because of practices that have been ongoing for periods of time arguably much longer than 25 years. The argument for a shorter time seems at times to be that we don't have certainty or good enough tools to predict that far in the future. A number of testifiers indicated that we should drop the lag component altogether because "studies have been off by a mile" in the past. Well how do we know the previous studies were off by a mile. Because now we have better data and better tools than in the past. Nobody is suggesting that we not use the best tools that we have and as tools advance, we use better tools. But we should start out with a more appropriate timeframe. The proposed rule uses 50 years in 001.02. If we're using 50 years there, it would seem consistent to use that amount here.

Thirdly, the proposed rule is focused on a crop irrigation requirement trigger. While this may be the most likely area of activity, it ignores the other uses that may be in play, whether they be municipal, industrial, in stream flow, etc. I'm nervous with the Department simply utilizing "a standard of interference appropriate for the use" for these other areas. How will the determination of what is appropriate for that standard be made? I've not seen any guidance on the question. I would prefer some simpler trigger of the existing appropriations not being met.

Fourth, the proposed rule has many unknowns or items left to Department discretion. The "standard of interference appropriate for the use" was one. The proposal suggests some determination would be made about diversions that were "on average" 85% of the annual crop irrigation requirement during a certain timeframe. It is unknown what is being averaged here or how. Then the rule suggests 65% of the annual crop requirement must be diverted during a subset of the previous timeframe. One percentage was averaged, one was not.

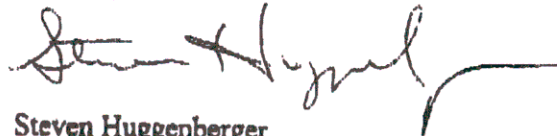
In looking at the annual irrigation requirement and the diverted amount over the last 20 years, has that amount remained stagnant over the last 20 years or is that an evolving number. Who's going to determine that?

The annual crop irrigation requirement will be determined to achieve the maximum yield for the area. That determination seems fraught with numerous unmentioned assumptions about corn varieties, fertilizer, soil characteristics, and a host of other agricultural variables. Also, what are the limits for the area considered? Is this a number that grows as we go west across the state? Are there different numbers for different areas of the state? For the first time, at the hearing, Dr. Ann Bleed testified that Derrel Martin will determine what the various areas will be. The point here is that there is still great uncertainty within much of the proposed rule.

I would be remiss if I did not also speak to the attacks on Director Patterson. The suggestions by a few that Roger has acted inappropriately in this process or has tainted motives without a shred of proof to back the statements up are outrageous. Those kinds of comments exhibit such a lack of understanding and bias that it is dismaying. While I have not always agreed with Roger, I have no question whatever regarding his integrity and his presence will be sorely missed at the Department.

Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in black ink, appearing to read "Steven Huggenberger", with a long horizontal flourish extending to the right.

Steven Huggenberger  
Assistant City Attorney  
City of Lincoln

**Eugene T. Glock**  
**Cedar Bell Farms**  
3031 G Road  
Rising City, NE 68658

Mr. Roger Patterson, Director  
Department of Natural Resources  
P.O. Box 94697  
Lincoln, NE 68509-4697

Dear Roger:

I intended to testify at the hearing on criteria for determining the appropriation status of river basins but didn't get my thoughts organized in time. I am sending this letter for the record.

I am not knowledgeable enough about hydrology to comment specifically on the proposed rule. I do have thoughts of a general nature that I would like considered before you make the final decision.

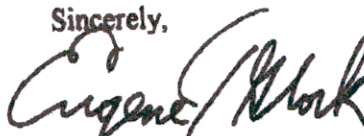
Most of the testimony seemed to indicate that your proposed rule "goes too far". After my own experience with a sharply declining water table and several years of observing the mess in the Republican basin, I am not as concerned that you are "going too far" as I am that you may not be going far enough. I certainly agree that there will be negative impacts on some people if a basin is declared fully appropriated and they have land in the hydrologically connected area. There will be a much greater negative impact if the rule does not go far enough and in a few years it becomes necessary to not only limit further development but to "back up" as is the case in the Republican basin.

I urge you to do your best, as I know you will, to formulate a rule that will lead to more efficient use of our water resources by halting overuse. It will be much easier to come back in ten years and say, "We were a bit too stringent with our assessments so we can relax the restrictions a bit", than to have to come back in ten years and say we are now over appropriated and will have to "back up" our use.

My greatest concern is that there will not be enough water when my grandchildren mature that they can enjoy the benefits we have had for the last fifty or more years.

Thank you for accepting my testimony.

Sincerely,

  
Eugene T. Glock

EXHIBIT

PENGAD 800-631-6989

45  
8-14-05



# Little Blue Natural Resources District

*"Serving The Public Since 1972"*

August 12, 2005

Department of Natural Resources  
c/o Ann Diers  
301 Centennial Mall South, 4<sup>th</sup> Floor  
PO Box 94676  
Lincoln, NE 68509-4676

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AUG 15 2005

DEPT. OF  
NATURAL RESOURCES

RE: Additional Testimony Regarding Fully Appropriated Basins

Dear Ann,

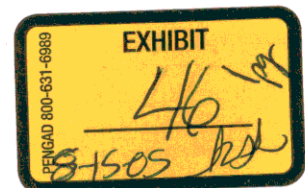
Thanks for the opportunity to provide comments on the proposed fully appropriated rules.

There is one more suggestion I'd like to offer to DNR. There were quite a few comments Thursday recommending that any DNR delineation of fully appropriated basins be stopped on NRD boundary lines to avoid significant regulatory overlap. I generally agree with that premise. But there may be instances that such actions, when confined strictly to NRD boundaries, simply do not work. For example, if the northwest portion of Adams County is declared fully appropriated as a result of the impacts to the Platte River, (as the preliminary maps seem to suggest) I do not believe the entire Little Blue NRD should be pulled into the designation. Perhaps the rule should state that the designation will follow NRD boundaries, or where impractical, the hydrologic boundary of the effected watershed. I believe the Upper Big Blue NRD would find themselves in a similar situation with fully appropriated status regarding the Platte River designation. I believe some flexibility is critically important in this area so the Department is not committed to a process that makes absolutely no sense for the rest of the district.

Please consider this recommendation as you evaluate the most desirable and feasible processes for interrelated water management. Thanks.

Sincerely,

Michael D. Onnen



August 12, 2005  
1824 Garland Street  
Grand Island, NE. 68803

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AUG 15 2005

DEPARTMENT OF  
NATURAL RESOURCES

Nebraska Department of Natural Resources  
301 Centennial Mall South  
Lincoln, NE. 68509-4676

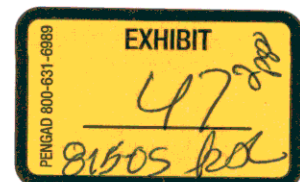
Please consider this correspondence my personal testimony relative to the Department's public hearing at Kearney, Nebraska on Thursday, August 11, 2005.

My named is Robert O'Dell. I am a 67 year old native Nebraskan. I wish to go on record in support of the Department's 10/50 proposal. I support this proposal only because it appears that more stringent regulation is not a consideration and would not receive approval at this time.

I also wish to be on record as opposing the present NRD form of groundwater management. It is obvious that the current system is not functioning as intended. This fact is witnessed by the gross mismanagement in the Republican River districts. Unfortunately, most Nebraskans will become aware of this political fiasco only after the arrival of a \$100 million plus bill from Kansas. This is not an "IF", but rather, a "WHEN" situation. Although it appears impossible to meet terms of the agreement, irrigators in those districts have pumped and continue to pump regardless of the consequences. They are aware that the 97 plus percent of us who are not irrigators will be forced to pick up the bulk of the bill for their violation of the agreement. They defy terms of the compact and demonstrate no intention to comply. As water depletion problems migrate eastward, it is predictable that without intervention, other NRD's, one after the other will follow their lead in the "domino effect".

At last, members of the Water Policy Task Force have recognized the conjunctive relationship of surface water and groundwater. That concession of itself dictates that management of both must fall under the same jurisdiction. Given the necessary authority, the personnel necessary to monitoring, adequate funding and a vehicle to facilitate impartial mediation, I sense that the existing DNR is up to the challenge. An agency of this type, given authority by legislation, would have the ability to regulate state wide water interests in a fair and equitable manner. Each individual user / irrigator must be held accountable for violation, placing responsibility not on the entire population of the state, but rather on the individual violator where such responsibility has always belonged.

I wish to be on record as opposed to the concept that taxpayers are obligated to reimburse irrigators who are forced to retire acres in an over-appropriated area. Irrigators, like other businessmen made choices: choosing to farm, choosing a particular area, choosing to irrigate, choosing to produce corn, choosing to deplete the aquifer below them.

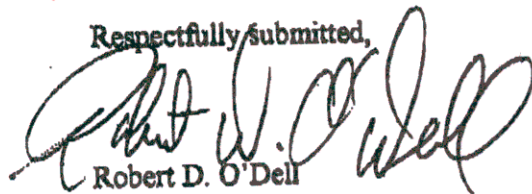


Although one or more of those options may have been unwise, that type of decision is no more the fault of the State than is the choice of a businessman who opts to operate an ice vending business in the Arctic. If irrigators so choose, they have the capacity to design, finance and administer a program to compensate one another for lost acres; acres, incidentally, which were most likely lost as a result of poor water management to begin with.

In my estimation, the proposals set forward by the DNR under the present dual system of water management are well conceived, reasonable and equitable. It seems doubtful that more stringent regulations will be considered in the present political atmosphere. DNR staff are to be congratulated on their efforts and results.

I extend my best wishes to resigned Director, Roger Patterson for a job well done under very difficult conditions. Good luck to you, Sir.

Respectfully submitted,



Robert D. O'Dell

Roger Patterson, Director  
Ann Bleed, Deputy Director  
Nebraska Department of Natural Resources  
301 Centennial Mall South  
Lincoln, NE 68509-4676

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AUG 15 2005

DEPARTMENT OF  
NATURAL RESOURCES

Dear Mr. Patterson and Ms. Bleed,

I would like to submit the following as testimony on Title 457, "Rules for Surface Water," and Chapter 24, "Rules Regarding the Determination of Fully Appropriated River Basins." Thank you.

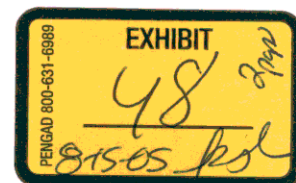
"Not quite a hundred years ago John Wesley Powell called attention the unpleasant fact that lands west of the 100<sup>th</sup> Meridian are not suited for the same kinds of uses as are the lands farther east .. We still have not faced the dry fact that the Great Plains are semiarid and quite unlike the Central Lowland (Indiana, Illinois and Iowa) and should not be used in the same way ... Water supplies in the Great Plains are inadequate to meet demands expected in the next two or three decades. Because irrigation consumes water, only half the water that is used is returned ... Either we find another use for this vast area -- a use that preserves its surface water when the inevitable, repeated and protracted droughts occur -- or we must be ready with subsidies and relief programs of one kind or another when it episodically becomes a disaster area." -- **Charles Butler Hunt, "A Misused Resource - The Great Plains,"** from "Natural Regions of the United States and Canada," copyright 1967

Nearly 40 years ago, warnings such as those above were being sounded on future depletion of the Ogallala Aquifer, which Nebraska is blessed to possess underneath its land and within its borders.

Just a decade later, in 1976, a study completed by Eric G. Lappala showed that groundwater pumping was already having a negative effect on nearby streams in the Upper Republican Natural Resources District. The report indicated that the flow in Frenchman Creek above Enders Reservoir had been depleted by 19 percent from 1967 to 1975, and that water table declines of as much as 19 feet had occurred in Chase County from 1952 to 1975.

Since the above two caveats more than a quarter-century ago, Nebraska has allowed the unbridled drilling of groundwater irrigation wells and generally unregulated pumping (in some cases, "mining") of groundwater, which has, expectedly, led to the depletion of entire stream flows and an alarming reduction in levels of many western Nebraska reservoirs and arguably the state's greatest outdoor resource, Lake McConaughy.

One of the few people with vision on this dilemma -- Robert Hipple, who owns a master's degree in natural resources and a wealth of experience and foresight in that field -- was removed last year as director of the Upper Republican NRD because he dared to speak the truth.



And rather than give credence to conservation measures or reductions in groundwater allocations, the same irrigators who led Mr. Hipple out the door have proposed still more taking of the state's waters, this time from an entirely different water basin.

It simply doesn't end.

I prefer to take a long view of Nebraska's water dilemma. I would like to help preserve this great natural resource so that my descendants can fish at healthy reservoirs and lakes, canoe free-flowing streams and make a living near abundant water resources if they so choose.

NRD officials from most of the state's 23 districts have lined up one after another to decry any additional burdens on their jobs and/or any change in their pro-groundwater irrigation mentality.

The mission of Nebraska's 23 NRDs, found up front on the front page of the Nebraska Association of Resource District's Web page, is "to conserve, sustain and improve our natural resources and environment." It is time we held them to this commitment and halt the indiscriminate exhaustion of our water supply. Our water quandary will not go away, no matter who much we mask its causes or how often we pray for rain.

As such, I strongly urge the Department of Natural Resources to "stick to its guns" and inaugurate the more stringent groundwater regulations statewide, a much-needed road map for Nebraska's water future. In fact, a 10/50 boundary for fully appropriated river basins could justifiably be made even more rigorous.

It is time to take a strong stand and usher Nebraska into the 21<sup>st</sup> century of water management. It is imperative that the state err on the side of water protection – for the sake of our children, grandchildren, great-grandchildren and beyond.

Sincerely,



Pete Letheby  
Journalist, free-lance environmental writer and lifetime Nebraskan  
Grand Island



# United States Department of the Interior

U.S. GEOLOGICAL SURVEY  
Water Resources Division  
Box 25046, MS 406  
Denver Federal Center  
Denver, Colorado 80225

Date 8/15/2005

2 Pages, including this page

## FACSIMILE COVER PAGE

TO: Andrea Kessler Nebraska Dept. of Natural Resources

TELEFAX NUMBER: 402-471-2900

FROM: Richard R. Luckey (303) 445-4616

TELEFAX NUMBER: (303) 445-4656

REMARKS: Please deliver to Ann Diems -

At request of Ann Bleed

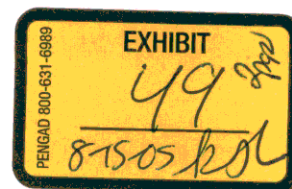
For Problems with Transmission, Call (303) 445-4600

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AUG 15 2005

DEPARTMENT OF  
NATURAL RESOURCES

Received Time Aug. 15. 1:48PM



bcc

Subject: Peer review of stream depletion methods

Ann --

Your email of early this morning asked about peer review of analytical methods to calculate stream depletion. I hope this helps.

C.V. Theis published some of the earliest papers on stream depletion by wells. His 1941 paper in the American Geophysical Union Transactions is frequently cited. This is a peer reviewed source. He also published in a 1963 USGS Water Supply Paper, another peer reviewed source.

R.E. Glover and C.G. Belmer published a paper on stream depletion in 1954 in the American Geophysical Union Transactions, which is peer reviewed. Glover later published book-length works at Colorado State University and the Bureau of Reclamation. These are widely used, but I am not sure if they were formally peer reviewed.

M.S. Hantush published a paper on stream depletion in 1965 in Journal of Geophysical Research, a peer reviewed journal.

C.T. Jenkins published an early paper on stream depletion by wells in 1968 in Ground Water, a peer reviewed journal. This was followed up in 1970 by Book 4, Chapter D1, of Techniques of Water-Resources Investigations of the United States Geological Survey, also peer reviewed.

There are numerous applications of the analytical methods in peer reviewed papers. One that I have on my shelf is A.W. Burne, 1981, Simulated hydrologic effects of possible ground-water and surface-water management alternatives in and near the Platte River, south-central Nebraska: U.S. Geological Survey Open-File Report 81-1116.

All analytical methods require idealization of the real system to solve the ground-water flow equation. The most common idealizations are that the aquifer is homogeneous and isotropic and extends for an infinite distance away from the stream and that the stream is a straight line. Most methods also require that the stream be in perfect connection with the aquifer. In practice, the real system can deviate from these idealizations and the analytical methods can produce reasonable results.

Use of ground-water flow models, such as MODFLOW, can reduce the amount of idealization necessary to calculate stream depletion, but the natural system must still be idealized to a certain degree. Construction and calibration of a ground-water flow model can be very expensive, require considerable amounts of data, and take a long time.

As far as I know, analytical methods or flow models are the only practical way to calculate stream depletion. In most situations, it is not possible to directly measure stream depletion. Stream depletion from a single well or a group of wells typically is small compared to the flow of a stream and the other things that perturb streamflow, and thus stream depletion is not directly measurable. Stream depletion due to many wells can be measured, but there is no reasonable way to allocate this stream depletion to individual wells.

-- Dick

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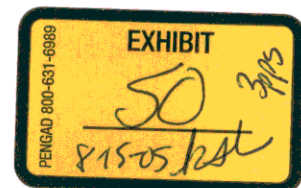
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TESTIMONY ON LB962.

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August 15, 2005

**R.E.: Testimony to Nebraska Dept. of Natural Resources concerning proposed "Rules and Regulations" on determining whether a basin is fully appropriated.**

**Director Patterson and Deputy Director Bleed, my name is Erik Alm. I am a Director of the Lower Platte North NRD and Chair of our Water Committee.**

**After attending the Kearney public hearing I thought of several issues that were not addressed. Please understand that I am aware that ground water pumping needs to be controlled, however, there are major differences between Eastern and Western Nebraska. In Eastern Nebraska we use irrigation to supplement our rainfall, whereas in Western Nebraska irrigation is often the entire source of water for the growing crop.**

**The controls in LB962 seem to be primarily about in-stream flows, and I do understand that minorities have rights, but when 85% of the irrigated acres in this state are from groundwater, I feel you are weighing too heavily on the surface water side. Especially, when you will not even talk about the 42 M.U.D. wells, which is the equivalent to approx. 600 irrigation wells. The output of these 42 wells is about 12% of all the wells in our entire district.**

**I have a problem with the fact that you are treating the new irrigation wells that have been drilled in the 9 months prior to your determination differently than the 42 M.U.D. wells that have been permitted but have yet to be pumped. We all need to be treated fair and equal.**

**My suggestion for handling these irrigation wells drilled within the 9 month period is to use the acres listed on the well registration and let the local NRD board approve and police these acres so that they are not overstated. Your current policy on these 9 month wells is just going to make crooks and liars out of honest people who are just trying to make a living, in addition to putting undue pressure on the local NRD directors.**

**As a LPNNRD director and Chair of the Water Committee, I am aware of our ground water levels, and other than a small contained aquifer west of David City, our ground water declines are very minimal.**

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As I am writing this testimony I have a feeling that this will just fall on deaf ears, however I hope you give this some consideration.

In closing, I want to thank you for meeting with me and always returning my phone calls, and I wish you the best in your new venture.

Respectfully submitted,

*Erik Alm*

Erik Alm - Director  
Lower Platte North NRD

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